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CASE REPORT

Management of maxillary defect with surgical and interim obturator

Nishant Bajpai[1], Motwani B K[2], Shailendra Kumar Sahu[3], Anurag Dani[4], Sanjeev Singh[5], Shuchi V Kulkarni[6]

[1]Post Graduate Student, Department of Prosthodontics, Chhattisgarh Dental College and research institute, Chhattisgarh, India

[2]Professor and Head, Department of Prosthodontics, Chhattisgarh Dental College and research institute, Chhattisgarh, India

[3, 4, 5] Reader, Department of Prosthodontics, Chhattisgarh Dental College and research institute, Chhattisgarh, India

[6] Senior Lecturer, Department of Prosthodontics, Chhattisgarh Dental College and research institute, Chhattisgarh, India

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ABSTRACT

Defects of maxilla are seen as a consequence of various congenital and acquired factors. Surgical removal of neoplastic tissue in the maxilla inevitably results in maxillary defect which can compromise various functions such as deglutition and speech. The prosthetic diagnosis and management in such condition should start in the pre-surgical phase with the help of diagnostic models and mock preparations after thorough consultation with the oral surgeon. Post-surgical management includes provision of surgical or immediate obturator followed by interim obturator and then the final prosthesis. This article gives a brief overview of treatment approach and management of a rare case of Fibrosarcoma of maxilla.

INTRODUCTION

The acquired defects of maxilla are seen following incidence of trauma, any pathological process and after surgery. These defects can be small or large in size and may involve hard palate alone or combined with the soft palate[1]. These defects lead to compromised state of the patient in terms of speech, mastication and deglutition. It is seen that not only physiological functions are hampered; the psychological state of the patient is also affected. Management of neoplasms often includes a combination of radiotherapy, chemotherapy and surgical resection.[2] The basic objectives of prosthodontic intervention could be psychological well-being of the patient, pre-operative dental procedures, pre-operative impressions and study models and suggestions for the oral surgeon.[3] Prosthodontic management starts with a thorough discussion of the planned surgery with the oral surgeon,

** Corresponding author: Dr. Nishant Bajpai, Post Graduate Student, Department of Prosthodontics, Chhattisgarh Dental College and research institute, Chhattisgarh, India Email: drnishantbajpai@yahoo.com*

examination, fabrication of diagnostic casts and necessary radiographs in order to thoroughly understand the clinical situation and to minimise the loss of oral structures necessary for optimum retention,stability and support.[4, 5, 6]

The therapy can be divided into three phases. The first phase is surgical obturation which serves many important objectives such as retaining the surgical pack, protection of the wound, performing physiological functions such as speech, deglutition and providing psychological benefit to the patient. It can be further subdivided into immediate surgical obturation where prosthesis is inserted immediately after the surgery and delayed surgical obturation in which prosthesis is inserted after 5 to 7 days of surgery.[6]

Optimum time period recommended for usage of surgical obturator is 7 to 10 days after insertion.[5] The second phase is called as interim/intermediate/temporary obturation which is used until the surgical site is healed completely and the overall condition is stable enough for the definitive prosthesis. The third phase is called as definitive obturation which is executed after complete healing and meticulous planning of the final prosthesis taking various factors into consideration. [6]

The article describes the prosthodontic management for a rare case of fibrosarcoma of maxilla which was planned for surgical removal.

TECHNIQUE

A 23 year old female, reported with a swelling in the maxillary arch resulting in gross facial asymmetry (Fig. 1). Irreversible hydrocolloid impressions (Vignette, Dentsply) were made for diagnostic purposes and the cast was duplicated. Modifications were done on the cast as per the anticipated amount of resection after discussion with the oral surgeon and an immediate surgical obturator was planned (Fig. 2). Modifications included elimination of teeth in the vicinity of the tumour and modification of hard palate region on the cast to mimic normal shape. Stainless steel wire of 19 gauge were used to fabricate circumferential clasps which would obtain retention from the remaining teeth. The clasps were secured in the desired area with the help of wax and a clear auto-polymerising acrylic resin (DPI) base plate was fabricated (Fig. 3). After surgical resection, the obturator was tried inside the patient's mouth and modifications were made to ensure proper fit. Surgical dressing was given which was supported by the obturator (Fig. 4). Patient was kept under observation and the surgical obturator was removed after 7 days.

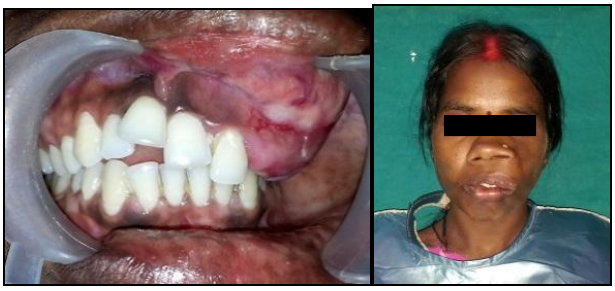

Figure 1: Pre-operative view showing gross facial asymmetry and the swelling in the maxillary arch

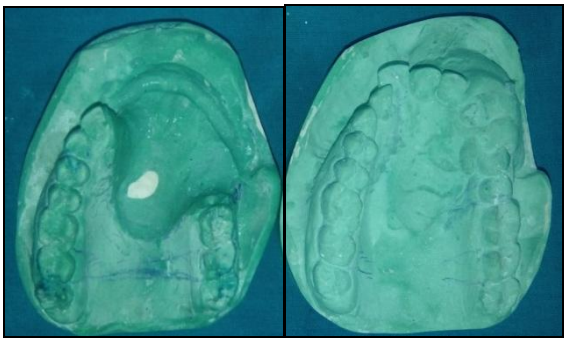

Figure 2: Obtained cast after preliminary impression and modification of the cast to simulate surgical resection

After 7 days, the state of healing was evaluated and it was seen that the defect was limited to hard palate only (Fig. 5). Diagnostic impression was made with irreversible hydrocolloid after blocking the defect with cotton gauze (Fig. 6). An interim obturator was planned which was to be used until complete healing. The wax trial pattern was made and maxillary anterior denture teeth were incorporated. All the teeth were completely free of occlusion. Stainless steel wire clasps were used to aid in retention. Relief was provided in the areas which were in healing phase by blocking out with dental plaster. After the try-in, heat cured resin interim obturator was inserted (Fig, 7).

DISCUSSION

Acquired defects of palate are a result of trauma, pathology, burns or surgical resection and predispose the patient to improper speech,

Oral fluids leaking into the nasal cavity and difficulty in executing physiological functions like mastication and deglutition.[7] The primary goal of prosthetic obturation is closure of the maxillectomy defect and separation of the oral cavity from the sino-nasal cavities. A pressure-resistant seal of the obturator bulb against the mucosal lining and skin graft, if placed, restores speech and swallowing functions. A successful prosthetic design for functional restoration of the maxillectomy defect utilizes the remaining palate and dentition to maximize the support, stability, and retention of an obturator bulb. Maxillofacial prosthetic reconstruction of the subtotal and total maxillectomy defect uses anatomical undercuts to augment retention. Despite modern imaging technologies, there still remains some uncertainty in predicting the exact extent of the surgical resection. Therefore, the prosthodontist

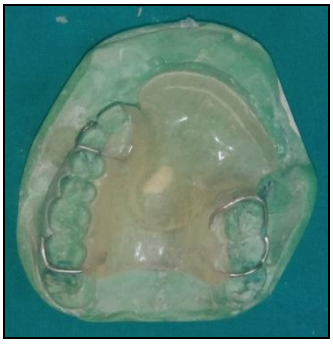

Figure 3: Fabrication of surgical obturator on the modified cast

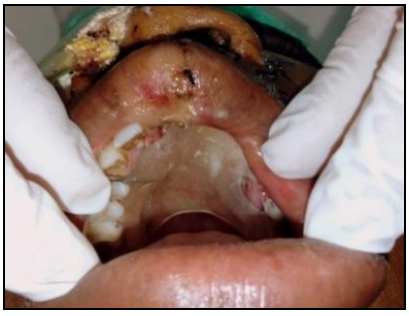

Figure 4: Modification at the time of surgery and insertion

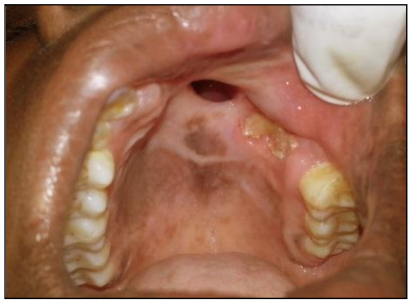

Figure 5: Intra oral defect after initial healing

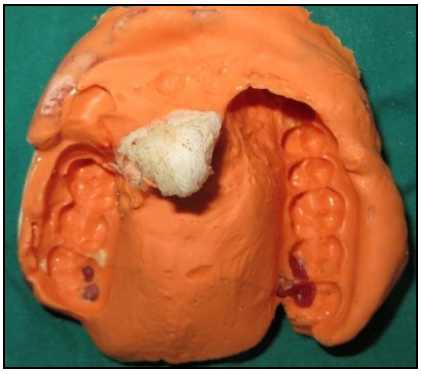

Figure 6: Irreversible hydrocolloid impression

must be prepared to modify the obturator immediately postoperatively. The modification results from a need to accommodate the teeth that are not resected but have been removed from the cast during obturator fabrication. Huryn (8) suggested modifying the obturator with a bur in the operating room. Arcuri and Taylor outlined 2 approaches, conservative and radical, regardless of the definitive lines of

resection for designing a surgical obturator for the dentulous patient. When the obturator is fabricated according to the most conservative line of resection, a surgical dressing may be needed to adapt the obturator to larger resections. On the other hand, fabricating the obturator for most extreme surgical resection may require adaptation of the obturator to smaller resections by removing the unnecessary portion.[4] Beumer et al recommended fabricating two or more prostheses pre-surgically in order to be prepared for most eventualities.

CONCLUSION

Effective obturation of the maxillectomy defect is a difficult task for the maxillofacial prosthodontist. Multidisciplinary treatment planning is essential to achieve adequate retention and function for the surgical obturator prosthesis. For patients undergoing maxillary

Figure 7: Insertion of interim obturator

resection, the definitive lines of resection are of necessity and determined at the time of the surgical procedure. Hence, the present method describes a surgical and interim obturator fabrication that allows minimal modification**.**

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